भारतीय मानक
Indian Standard

IS 11602 : 2023

पैक किये हुए गुलाब जामुन — विशिष्टि

(पहला पुनरीक्षण)

Packed *Gulab Jamuns* — Specification

(First Revision)

ICS 67.100.99

© BIS 2022

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, 9 बहादुर शाह ज़फर मार्ग, नई दिल्ली - 110002
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI - 110002
www.bis.gov.in www.standardsbis.in

January 2023 **Price Group 6**

Dairy Products and Equipment Sectional Committee, FAD 19

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Dairy Products and Equipment Sectional Committee had been approved by the Food and Agriculture Division Council.

Gulab Jamuns, a *Khoa*-based indigenous product is widely consumed throughout India and is a very popular sweet. The traditional method of manufacture involves basically the following steps:

Khoa is mashed till it attains a smooth texture. It is then mixed with a binder such as *maida* and arrowroot, so that it gets a dough-like consistency. The dough is portioned and rolled into round balls. The balls are fried in vegetable fats or oils or ghee until light to dark-brown in colour. Fried balls are soaked in sugar syrup for approximately 2 hours, before they are offered for consumption. *Gulab Jamuns* may also be made from milk solids, milk powder and *Gulab Jamun* mix in place of *Khoa*. Such product is dispensed loose and has a shelf life of 3 to 4 days at room temperature. However, this standard covers the requirements for packed *Gulab Jamuns* only.

This standard was originally published in 1986. This revision has been brought out to incorporate the following major changes:

a) Physical description of the product has been updated;
b) Concentration of syrup has been updated;
c) Microbiological requirements have been updated;
d) The quality of oils and fats to be used for frying of *Gulab Jamun* balls has been specified; and
e) Test methods have been updated.

In the formulation of this standard, due consideration has been given to the provisions of the *Food Safety and Standards Act*, 2006 and the Rules and Regulations framed thereunder and the *Legal Metrology (Packaged Commodities)* Rules, 2011. However, this standard is subject to the restrictions imposed under these, wherever applicable.

The composition of the committee responsible for formulation of the standard is listed in Annex C.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

PACKED *GULAB JAMUNS* — SPECIFICATION

(First Revision)

1 SCOPE

This standard prescribes the requirements and methods of sampling and test for packed *Gulab Jamun*. This standard does not cover the requirements for *Pantua* and *Kalajam*, which are *chhana* based products.

2 REFERENCES

The standards listed in Annex A contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards.

3 REQUIREMENTS

3.1 *Gulab Jamun* shall be prepared from *Khoa* (conforming to IS 4883) or *gulab jamun* mix (mixture of skimmed milk powder, whole milk powder, vegetable fat/*ghee*, *maida*, semolina and permitted food additives) or other milk solids. When prepared from *Khoa* also, it may contain *maida* (wheat flour) (*see* IS 1009), semolina (*see* IS 1010), arrowroot, nuts and baking powder (*see* IS 1159) and permitted flavouring materials. It shall be free from dirt and other foreign matter as well as insects and mould growth. *Gulab Jamun* dough shall not contain more than 20 percent of the permitted binders (*maida*, semolina and arrowroot), singly or in combination.

3.2 The *Gulab Jamun* shall be uniformly brown in colour. It shall bespherical or cylindrical in shape and free from lumps. It shall not have hard central core. The product shall have uniform granular texture, not too soft or too hard. The product shall be fully succulent with sugar syrup, have pleasant and, clean flavor and free from any off-flavours.

3.3 Hydrogenated fats and oils shall not be used for frying of *Gulab Jamuns*.

3.4 The content of industrial trans fatty acids in the oils and fats used for frying of *Gulab Jamun* shall not exceed 2 percent by weight, when tested as per Annex F of IS 10633.

3.5 *Gulab Jamun* balls shall comply with the requirements given in Table 1 and Table 2.

Table 1 Compositional Requirements for *Gulab Jamun* Balls

(*Clause* 3.5)

Sl No.	Characteristic	Requirement	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	Moisture, percent by mass, *Max*	30.0	Annex A of IS 10484
ii)	Fat, percent by mass, *Min*	8.0	IS 12758
iii)	Protein, percent by mass, *Min*	6.0	IS 11917
iv)	Total sugar, percent by mass, *Min*	40	Annex B of IS 4079

Table 2 Microbiological Requirements for *Gulab Jamun* Balls

(*Clause* 3.5)

Sl No.	Characteristic	Requirement				Method of Test, Ref to
		Sampling Plan		Limit (cfu)		
		n	c	m	M	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	Aerobic plate count	5	3	5/g	15/g	IS 5402 (Part 1)
ii)	*Staphylococcus aureus* (Coagulase positive)	5	0	Absent/25 g	–	IS 5887 (Part 8/ Sec 1* or Sec 2)
iii)	*Escherichia coli*	5	0	Absent/25 g	–	IS 5887 (Part 1)
iv)	*Salmonella sp.*	5	0	Absent/25 g	–	IS 5887 (Part 3/Sec 1)

Table 2 (*Concluded*)

Sl No.	Characteristic	Requirement				Method of Test, Ref to
		Sampling Plan		Limit (cfu)		
		n	c	m	M	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
v)	*Shigella sp.*	5	0	Absent/25 g	–	IS 16429
vi)	*Clostridium spp.*	5	0	Absent/25 g	–	IS 5887 (Part 4)
vii)	*Listeria monocytogenes*	5	0	Absent/g	__	IS 14988 (Part 1)
viii)	Yeast and mold count	5	0	< 5/ml	__	IS 16069 (Part 1)

NOTES

1 For sampling plan, *see* Annex B.

2 In case of dispute, the method indicated by '*' shall be the referee method.

3 The requirement for *Salmonella* and *Shigella* shall be tested in a laboratory situated away from the production area.

3.6 The sugar syrup shall be clear and light to golden yellow in colour, and shall conform to the requirements given in Table 3 and Table 4. As determined by the method given in **F-3.3** of IS 4079, the proportion of free syrup in a *Gulab Jamun* pack shall not exceed sixty percent of the declared net mass.

3.6.1 There shall not be excessive free fat floating in the syrup or adhering to *Gulab Jamun* pieces. The package shall not also contain broken pieces of *Gulab Jamun* in the syrup.

Table 3 Requirements for Sugar Syrup

(*Clause* 3.6)

Sl No.	Characteristic	Requirement	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	Acidity of syrup, ml of 0.1 NaOH required to neutralize 100 ml of the syrup, *Max*	6.0	Annex D of IS 4079
ii)	Concentration of syrup, percent by mass, *Min*	50	Annex E of IS 4079

Table 4 Microbiological Requirements for Sugar Syrup

(*Clause* 3.6)

Sl No.	Characteristic	Requirement				Method of Test, Ref to
		Sampling Plan		Limit (cfu)		
		n	c	m	M	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	Aerobic plate count	5	3	5/ml	15/ml	IS 5402 (Part 1)
ii)	Yeast and mold count	5	0	< 5/ml	–	IS 16069 (Part 1)
iii)	*Clostridium spp.*	5	0	Absent/25 g	–	IS 5887 (Part 4)

NOTE — For sampling plan, *see* Annex B.

3.7 The heavy metals, pesticide residues, antibiotic and veterinary drug residues, toxic substances (melamine), naturally occurring toxins and other contaminants, if any, in the raw materials used in the manufacture of the product shall not exceed the limits as prescribed in the *Food Safety and Standards* (*Contaminants, Toxins and Residues*) *Regulations*, 2011.

3.8 The product shall be, as far as possible, manufactured, packed and stored under hygienic conditions (*see* IS 2491).

4 PACKING, MARKING AND STORAGE

4.1 Packing

All the material used for packing the *Gulab Jamuns* shall be of such nature as to impart no off-flavour or odour, nor in anyway contaminate the product packed under normal conditions of manufacture, storage and use.

4.2 Marking

The following information shall be marked legibly and indelibly on each container:

a) Name of the product;
b) List of the ingredients in the descending order;
c) Name and address of the manufacturer;
d) Batch or code number;
e) Month and year of manufacturing or packing;
f) Net mass of the contents;
g) Drained weight (optional);
h) Number of *Gulab Jamuns* in the container (optional);
j) Direction for storage;
k) Expiry/use by (date, month & year); and
m) Any other requirements under the *Food Safety and Standards* (*Labelling and Display*) *Regulations*, 2020 and the *Legal Metrology Act*, 2009 and Rules framed thereunder.

4.2.1 *BIS Certification Marking*

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

4.3 Storage

The containers shall be stored in a cool place.

5 SAMPLING

Representative samples of the product shall be drawn as prescribed in Annex F of IS 4079 except that the proportion of syrup shall not be more than 60 percent of the declared net mass (*see* **3.3** and also **F-4.1.1** of IS 4079).

ANNEX A

(*Clause* 2)

LIST OF REFERRED STANDARDS

IS No.	*Title*
IS1009 : 1979	Specification for *maida* for general purposes (*second revision*)
IS 1010 : 1968	Specification for *suji* or *rava* (Semolina) (*first revision*)
IS 1159 : 1981	Specification for baking powder (*first revision*)
IS 2491 : 2013	Food hygiene — General principles — Code of practice (*third revision*)
IS 4079 : 2023	Packed *Rasogolla* — Specification (*first revision*)
IS 4883 : 2023	Khoa — Specification (*second revision*)
IS 5402 (Part 1) : 2021/ISO 4833-1: 2013	Microbiology of the food chain — Horizontal method for the enumeration of microorganisms: Part 1 Colony count at 30 °C by the pour plate technique (*third revision*)
IS 5887	Methods for detection of bacteria responsible for food poisoning;
(Part 1) : 1976	Isolation, identification and enumeration of *Escherichia coli* (*first revision*):
(Part 3/Sec 1) : 2020//ISO 6579-1 : 2017	Horizontal method for the detection, enumeration and serotyping of *Salmonella*, Section 1 Detection of *Salmonella* spp. (*third revision*):
(Part 4) : 1999	Isolation and identification of *Clostridium perfringens* (*Clostridium welchii*) and *Clostridium botulinum* and enumeration of *Clostridium perfringens* (*second revision*):
(Part 8/Sec 1) : 2002/ISO 6888-1: 1999	Horizontal method for enumeration of coagulase-positive Staphylococci (*Staphylococcus aureus* and other species), Section 1 Technique using Baird-Parker agar medium:
(Part 8/Sec 2) : 2002/ISO 6888-2 : 1999	Horizontal method for enumeration of coagulase — Positive (*Staphylococcus aureus* and other species), Section 2 Technique using rabbit plasma fibrinogen agar medium
IS 10484 : 2021	Paneer — Specification (*first revision*)
IS 10633 : 2017	Vanaspati — Specification (*third revision*)
IS 11764 : 2005/ISO 2911 : 2004	Sweetened condensed milk — Determination of sucrose content — Polarimetric method (*first revision*)
IS 11917 : 2018/ISO 8968-1 : 2014	Milk and milk products — Determination of nitrogen content — Kjeldahl principle and crude protein calculation (*first revision*)
IS 12758 : 2005/ISO 1735 : 2004	Cheese and processed cheese products — Determination of fat content — Gravimetric method (reference method) (*first revision*)
IS 16069 (Part 1) : 2013/ISO 21527-1 : 2008	Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of yeasts and moulds: Part 1 Colony count technique in products with water activity greater than 0.95
IS 16429 : 2018/ISO 21567 : 2004	Microbiology of food and animal feeding stuffs — Horizontal method for the detection of *Shigella* spp.

ANNEX B

(*Table* 2 *and* 4)

SAMPLING PLAN FOR MICROBIOLOGICAL REQUIREMENTS

B-1 SAMPLING PLAN FOR MICROBIOLOGICAL REQUIREMENTS

The terms *n*, *c*, *m* and *M* used in this standard have the following meaning:

n = Number of units comprising a sample;
c = Maximum allowable number of units having microbiological counts above *m* for 2-class sampling plan and between *m* and *M* for 3-class sampling plan;
m = Microbiological limit that separates unsatisfactory from satisfactory in a 2-class sampling plan or acceptable from satisfactory in a 3-class sampling plan; and
M = Microbiological limit that separates unsatisfactory from satisfactory in a 3-class sampling plan.

B-2 INTERPRETATION OF RESULTS

2- Class Sampling Plan (where n, c and m are specified)	*3- Class Sampling Plan (where n, c, m and M are specified)*
1.Satisfactory, if all the values observed are $\le m$ 2.Unsatisfactory, if one or more of the values observed are > *m* or more than *c* values are > *m*	1. Satisfactory, if all the values observed are $\le m$ 2. Acceptable, if a maximum of c values are between m and *M* and the rest of the values are observed as $\le m$ 3. Unsatisfactory, if one or more of the values observed are > *M* or more than c values are > *m*

ANNEX C
(*Foreword*)

COMMITTEE COMPOSITION

Dairy Products and Equipment Sectional Committee, FAD 19

Organization	*Representative(s)*
National Dairy Research Institute, Karnal	Dr Dheer Singh (***Chairperson***) Dr Manmohan Singh Chauhan (***Former Chairperson***)
All India Food Processors Association, New Delhi	Dr K. L. Gaba Shri Vijay Gaur (*Alternate*)
Bihar State Cooperative Milk Producers' Federation Ltd, (COMPFED), Patna	Shri Sushil Kumar Shri Rupesh Raj (*Alternate*)
Confederation of Indian Food Trade & Industry, New Delhi	Ms Varsha Yadav Dr Anirudha Chhonkar (*Alternate*)
Confederation of Indian Industry, New Delhi	Ms Neha Aggarwal Ms Arti Gupta (*Alternate*)
Centre for Analysis and Learning in Livestock and Food (CALF), Anand	Dr Rajesh Nair Dr Rajeev Chawla (*Alternate*)
Directorate of Marketing and Inspection, Faridabad	Dr D. M. Govind Reddy Shri Rahul Singh (Alternate)
Export Inspection Council of India, New Delhi	Dr J. S. Reddy Shri Kumar Narender (*Alternate*)
Envirocare Labs Pvt Ltd., Thane	Shri Nilesh Amritkar Ms Priti Amritkar (*Alternate*)
Food Safety and Standards Authority of India, New Delhi	Dr Monica Puniya
Gujarat Cooperative Milk Marketing Federation Ltd, Anand	Shri Sameer Saxena Shri Sayan Banerjee (*Alternate*)
Indian Dairy Association, New Delhi	Dr G. S. Rajorhia Dr Satish Kulkarni (*Alternate*)
IDMC Ltd, Anand	Shri Devender Gupta Shri Prakash Maheshwari (*Alternate*)
Indian Stainless Steel Development Association, Gurgaon	Shri Rohit Kumar Shri Rajat Aggarwal (*Alternate*)
Jupitor Glass Works, New Delhi	Shri Karan Nangia Shri Amreek Singh Puri (*Alternate*)
Ministry of Fisheries, Animal Husbandry and Dairying, Department of Animal Husbandry and Dairying, New Delhi	Shri Goutam Kumar Deb Shri Ajit Kumar K. (*Alternate*)
Mother Dairy Fruit and Vegetable Ltd, Delhi	Dr Nita Sen Shri Shailender Kumar (*Alternate*)

Organization	*Representative(s)*
National Dairy Development Board, Anand	Shri Sd Jaisinghani Shri Suresh Pahadia (*Alternate*)
National Dairy Research Institute, Karnal	Dr Vivek Sharma Dr Rajesh Kumar Bajaj (*Alternate*)
National Institute of Food Technology Entrepreneurship & Management (NIFTEM), Sonipat	Dr P. K. Nema
National Institute of Nutrition, Hyderabad	Dr B. Santosh Kumar Dr Sylvia Fernandez Rao (*Alternate*)
Punjab State Co-operative Milk Producers' Federation Limited.	Dr Sanjeev Kumar Sharma
Rajasthan Co-operative Dairy Federation (RCDF) Ltd, Jaipur	Shri J. D. Singh
Tamil Nadu Co-operative Milk Producers' Federation Ltd, Chennai	Shri S. R. Sankar Shri S. Jeyachandran (*Alternate*)
Tetra Pak India Pvt Ltd, Pune	Shri Shashikant Ramnath Suruse Shri Sameer Singh Suhail (*Alternate*)
Vimta Labs Limited, Hyderabad	Dr Jagadeesh Kodali Dr Muni Nagendra Prasad Poola (*Alternate*)
BIS Directorate General	Shrimati Suneeti Toteja, Scientist 'E'/Director and Head (Food and Agriculture) [Representing Director General (*Ex-officio*)]

Member Secretary
Dr Bhawana
Scientist 'D'/Joint Director
(Food and Agriculture), BIS

Panel for Revision of Indian Standards on Traditional Indian Dairy Products, FAD 19/Panel XIII

Organization	*Representative(s)*
National Dairy Research Institute, Karnal	Dr Kaushik Khamrui **(*Convenor*)**
Bihar State Milk Cooperative Federation Limited, Patna	Shri Rupesh Raj
Bikanervala Foods Pvt Ltd, Delhi	Dr Rajesh Gupta
Food Safety and Standards Authority of India, New Delhi	Shri Sunil Bakshi
Gujarat Cooperative Milk Marketing Federation Limited, Anand	Shri sayan Banerjee

Organization	*Representative(s)*
Haldiram Sweets, New Delhi	MS RIKA RANJAN
In Personal Capacity (*House No. 616, Sector 2, Panchkula - 134112*)	DR D.K. SHARMA
National Dairy Development Board, Anand	SHRI ADITYA JAIN
Southern Regional Station, National Research Institute, Bengaluru	DR K. JAYARAJ RAO

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 2016 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Head (Publication & Sales), BIS.

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the website-www.bis.gov.in or www.standardsbis.

This Indian Standard has been developed from Doc No.:FAD 19 (18800).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 2323 0131, 2323 3375, 2323 9402 *Website*: www.bis.gov.in

Regional Offices: *Telephones*

Central : 601/A, Konnectus Tower -1, 6th Floor,
DMRC Building, Bhavbhuti Marg, New
Delhi 110002 { 2323 7617

Eastern : 8th Floor, Plot No 7/7 & 7/8, CP Block, Sector V,
Salt Lake, Kolkata, West Bengal 700091 { 2367 0012
2320 9474

Northern : Plot No. 4-A, Sector 27-B, Madhya Marg,
Chandigarh 160019 { 265 9930

Southern : C.I.T. Campus, IV Cross Road, Taramani, Chennai 600113 { 2254 1442
2254 1216

Western : Plot No. E-9, Road No.-8, MIDC, Andheri
(East), Mumbai 400093 { 2821 8093

Branches : AHMEDABAD. BENGALURU. BHOPAL. BHUBANESHWAR. CHANDIGARH. CHENNAI. COIMBATORE. DEHRADUN. DELHI. FARIDABAD. GHAZIABAD. GUWAHATI. HIMACHAL PRADESH. HUBLI. HYDERABAD. JAIPUR. JAMMU & KASHMIR. JAMSHEDPUR. KOCHI. KOLKATA. LUCKNOW. MADURAI. MUMBAI. NAGPUR. NOIDA. PANIPAT. PATNA. PUNE. RAIPUR. RAJKOT. SURAT. VISAKHAPATNAM.

Published by BIS, New Delhi